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ABSTRACT

A study investigated the rate of vocabulary acquisition in English-Japanese word pairs among college-age Japanese learners in a classroom situation. Subjects were 41 students in an intensive program of English for academic purposes. Three groups of students were given word pair lists of different lengths, and guided in studying them over a period of 6 weeks. Vocabulary development was assessed using quizzes asking for Japanese translations of English words. A total of 1,000 high-frequency English words were used. Forty-word pre- and posttests were used to extrapolate the number of words students learned over the period of the study. Results indicate the group given the longest list of words (1,000) raised their scores by an average of 5.8 words out of 40; the class given only 850 words gained 5.0 words; the class given 700 word to learn gained 9.2 words. When tested on the entire 1,000 words, the 1,000-word class gained the most over the 6 weeks; the 850-word group gained less, and the 700-word group gained the least. However, from statistical analyses it is concluded that all classes learned about the same number of words; the size of the word list presented to the students did not affect the number of words learned. (Contains 10 references.) (MSE)

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The Acquisition of Basic Vocabulary by College-age Japanese Students in an Intensive EAP Program

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1. INTRODUCTION

Words are the building blocks of language; clearly a larger vocabulary is a goal of all serious language learners. First language learners acquire a vast vocabulary largely through indirect means; few words are learned through direct study. Aitchison (1997, p. 63) estimates that a English speaker acquires an average of over 10 words a day between the ages of 5 and 20. Similarly, second language learners acquire most of their vocabulary indirectly (Nation, 1982). Nevertheless, there is general agreement on the usefulness of direct learning of vocabulary as a compliment to indirect learning. This learning can speed the development of a learner's vocabulary, particularly by facilitating rapid initial learning of new words (Nation, 1982). Students often use lists to learn new words, although many teachers are uncomfortable with study of words out of context. This kind of study, as part of a broader course, can be quite effective (Nation, 1990, pp. 126-127).

Research has shown that it is possible for learners to memorize large numbers of target language-native language words pairs in a short period of time. Thorndike (1908: in Nation, 1982) reported an average rate of 34 German-English pairs per hour, with over 60% of the words remembered 42 days later. Webb (1962: in Nation, 1982) found rates varying from 33 to 166 English-Russian pairs learned per hour. These rates may strike a classroom teacher as high. The conditions of a study must be considered carefully when interpreting the results. Though experimental findings often do not relate directly to classroom situations, these findings do seem to indicate potential for learning vocabulary through word pair study.

2. THE STUDY

2.1 Purpose

The purpose of this research is to investigate the possible rate of vocabulary

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acquisition in English-Japanese word pairs among college-aged Japanese learners in a classroom situation. Three groups of students were given word pair lists of different lengths. The students were guided in studying the lists over a period of 6 weeks and their vocabulary acquisition was assessed using quizzes. The following research questions were addressed:

1). How many words can a teacher expect learners to learn in a fixed length of time? Does the size of the list affect the number of words a student can learn?

2). If a given number of words must be taught in a fixed period, should all of the words be taught, or is it more effective to concentrate on a smaller subset of the words?

2.2 Subjects

The subjects for this experiment were 41 college students studying English for academic purposes in an intensive program. Their average score on the Michigan Placement Test (MPT) was 37.3. The level of students is comparable to a student in the 2nd-3rd year of a Japanese junior high school. During the time of the study, they received four hours of classroom instruction per day from Monday to Friday: grammar, reading, listening, and conversation.

2.3 Methodology

This study investigated students' learning and retention of word pairs, an English word and a Japanese translation. The subjects were given lists of word pairs to memorize and tested on these pairs. All test items required the students to write a Japanese equivalent of a single English word. The results of these tests were analyzed to determine the number of pairs learned.

To investigate the effects of different lengths of word lists, the subjects were divided into three classes, and each class was given a different number of word pairs to learn over the six weeks of the study. The students were divided into the three classes by the result of The Michigan Placement Test and a 1,000 words vocabulary pre-test, in order to produce three classes of roughly equal ability in terms of both general English ability and vocabulary knowledge. The results of

one-way analysis of variances (ANOVA) performed show that there were no significant differences among the three classes. (Tables 1.1, 1.2, 2.1 and 2.2)

Table 1.1 Descriptive Statistics for Michigan Placement Test

	N	Mean	SD
1,000-word class	15	37.8	6.0
850-word class	14	36.9	5.7
700-word class	12	37.4	6.5

Table 1.2 ANOVA for Michigan Placement Test

	SS	df	MS	F
Between	5.51	2	2.76	0.08
Within	1394.25	38	36.69	
Total	1399.76	40		

$F^{2}_{38}(0.01)=5.21 > F=0.08$ ∴ no significant difference

Table 2.1 Descriptive Statistics for 1,000 Words Vocabulary Pre-test

	N	Mean	SD
1,000-word class	15	21.8	6.0
850-word class	14	20.9	5.6
700-word class	12	22.9	6.3

Table 2.2 ANOVA for 1,000 Words Vocabulary Pre-test

	SS	df	MS	F
Between	25.56	2	12.78	0.35
Within	1386.25	38	36.48	
Total	1411.80	40		

$F^{2}_{\infty}(0.01)=5.21 > F=0.35$ ∴ no significant difference

2.4 Material

The vocabulary lists used were based on the General Service List (GSL) (West, 1953). The words of the GSL were arranged into frequency order according to

the count in the Brown Corpus (Kucera and Francis, 1967). The list was analyzed to eliminate closely related words and a list of approximately 2,200 words in frequency order was devised. The most frequent 1,000 words of this list were paired with single Japanese equivalents to create the material for this study. These 1,000 words represent the most frequent words in the Brown Corpus, a corpus of 1,000,000 words of written American English, modified to eliminate numbers, initials and proper nouns and with counts of related words combined. At the beginning level, frequency is an important guide when deciding which words to teach (Nation, 1990, pp. 11-26; Willis, 1990, pp. v-viii).

Three lists were made based on the 1000 words list: the full 1,000 words, words 1 through 850 , and words 1 through 700. These 3 lists were then divided into 5 weekly study lists. It was desired that the lists be roughly equal in difficulty. Therefore, assuming a relationship between frequency and difficulty, high and low frequency words were mixed on these lists. The first list included words 1, 6, 11, 16... the second, words 2, 7, 12, 17... etc. The weekly lists of the 1000-word class had 200 words, the 850-word class had 170 words, and the 700-word class had 140 words.

2.5 Procedure

The study was conducted for the first 6 weeks of the first term. As noted above, the subjects were given pre-tests of the entire 1,000 words. The classes which were given 850 and 700-word lists also took another pre-test on their smaller word groups. The weekly word lists were then given to the classes, and students were guided in their study of these lists. The students studied the lists outside of class and took a 40 item test every week over a period of 5 weeks. At the end of the 6th week, all students took a post-test of the 1,000-word list. The 850 and 700-word classes also took a post-test of their shorter lists. Only about 20 minutes of class time was used per week to conduct weekly quizzes and give feedback on those quizzes.

All vocabulary quizzes consisted of 40 items, simply isolated English words for which students wrote Japanese translations. The tested words were chosen randomly by a computer. On the weekly quizzes, 20 words were from the current week's list and 20 words were from the previous lists. The pre-tests and post-

tests were randomly selected from the entire list of words; either 1,000 words, 850 words, or 700 words. They also consisted of 40 items. Parts of speech mistakes in translation were accepted unless the meaning changed. For instance, "grow" is *seicho suru* (v), but *seicho* (n), which means "growth" was accepted. However, for the word "practical"(adj.), *renshu*, which is a noun, was not acceptable because the translation of "practical" is not *renshu no* but *jissaiteki na*. *Katakana* transcriptions were not accepted unless the translation on the list was written in *katakana*, or the student gave additional explanation next to the *katakana* word. Estimates of student's knowledge of entire lists, whether 1,000, 850, or 700 words, were made by extrapolating from the results of the 40-word pre and post-tests.

3. RESULTS

3.1 Acquisition Rate of Words Within the Different Lists

First, the number of words acquired within the group of words studied were compared to determine which class showed the most improvement. Students pre-test and post-test scores within their groups were analyzed. The post-test result showed that the class given 1,000 words raised their scores by an average of 5.8 words out of 40 (+14.5%), the class given 850 words gained 5.0 words (+12.5%), and the class given 700 words gained 9.2 words (+23%). (Table 3.1) ANOVA was conducted in order to analyze the results and no significant differences were found among the groups. (Table 3.2)

Table 3.1 Descriptive Statistics for Vocabulary Pre/ Post -tests and the Gain in the Number of Words Known within Their Groups

	pre-test		post-test		gain	
	Mean	SD	Mean	SD	Mean	SD
1,000-word class	21.8	6.0	27.6	9.1	5.8 (+14.5%)	5.2
850-word class	22.1	5.2	27.1	5.1	5.0 (+12.5%)	3.9
700-word class	25.4	5.5	34.6	3.0	9.2 (+23.0%)	4.7

Table 3.2 ANOVA for the Gain in the Number of Words Known within Their Groups

	SS	df	MS	F
Between	124.18	2	62.09	2.81
Within	840.07	38	22.11	
Total	964.24	40		

$F^{2}_{38}(0.01)=5.21 > F=2.81$ ∴ no significant difference

The 1,000-word class's test scores improved by an average of 14.5% in 6 weeks, equivalent to about 145 words, or 24.2 words per week. The 850-word class's scores rose 12.5% on tests of the 850 words. This represents an increase of about 106 words, or 17.7 words per week. The 700-word class's score rose 23% on tests of 700 words for a total of 160 words or 26.8 per week. (Table 4) For the three classes combined, the average number of words learned per week was 22.9 words.

Table 4. The Rate of Vocabulary Acquisition within Their Groups

	number of words/week learned
1,000-word class	24.2
850-word class	17.7
700-word class	26.8
Mean	22.9 word/week

3.2 Acquisition Rates of the Entire 1,000-Word List in the Different Classes

Pre-test and post-test scores of the entire 1,000-word list were compared to find out in which class the knowledge of first 1,000 words grew most in the period of 6 weeks. The 1,000-word class's score increased by an average of 5.8 words on the 40-word test (+14.5%), the 850-word class increased by an average of 4.9 words (+12.3%) and the 700-word class increased by 3.6 words (+9.0%). The ANOVA showed that the differences in means were not significant among the three classes. (Tables 5.1 and 5.2) We can not say that the 1,000-word class improved their knowledge of the first 1,000 words more than the 700-word class although the

mean score was the highest.

Table 5.1 Descriptive Statistics for Vocabulary Pre /Post -tests and the Gain in the Number of Words Known within 1,000 Words

	pre-test		post-test		gain	
	Mean	SD	Mean	SD	Mean	SD
1,000-word class	21.8	6.0	27.6	9.1	5.8 (+14.5%)	5.2
850-word class	20.9	5.6	25.9	5.9	4.9 (+12.3%)	4.3
700-word class	22.9	6.3	26.5	4.4	3.6 (+9.0%)	5.3

Table 5.2 ANOVA for the Gain in the Number of Words Known within 1,000 Words

	SS	df	MS	F
Between	32.88	2	16.44	0.66
Within	952.25	38	25.06	
Total	985.12	40		

$F^{2}_{38}(0.01)=5.2 > F=0.66$ ∴no significant difference

Table 6. The Rate of Vocabulary Acquisition within 1,000 Words

	number of words/week learned
1,000-word class	24.2
850-word class	20.5
700-word class	15.0
Mean	19.9 words/week

The improvement in 1,000-word class's test scores works out to an average gain of 24.2 words per week. The students in the 850-word class learned 20.5 words per week, and the 700-word class learned 15 words per week, within the entire 1,000-word list. As mentioned above, these differences were not

statistically significant. The average rate of vocabulary acquisition within 1,000 words per week was 19.9 words. (Table 6)

4 DISCUSSION

4.1 Research Question 1

In a fixed length of time, how many words should a teacher expect to be learned? Does the size of the list affect the number of words students can learn?

The ANOVA showed there was no evidence for a statistically significant difference in the acquisition rates. Therefore, it is possible to say that all classes learned about the same number of the words, which was 22.9 words per week on average. The different sizes of the lists, 1,000, 850, 700 words, did not seem to affect the number of words students learned. Therefore, we can conclude that students will learn about 23 words per week, no matter how many words they need or try to learn.

As the size of the lists were different, the number of words students needed to learn was different. Two methods were used to determine the number of words on the lists that were unknown to the students. First, pre-tests were given, as described above. In addition, students assessed their own knowledge of the words by looking through the lists and marking words that they did not know. This self-assessment was used by the students to guide their study, and the results were recorded. According to their own count of unknown words, the 1,000-word class had an average of 62.9 words per week to learn, while the 850-word class had 46 words per week, and the 700-word class had 27.8 words per week. (Table 7)

Table 7. Number of Words to Learn per Week by Self-assessment and by Pre-test Result

	by self-assessment	by pre-test result	difference between self- assessment and pre-test result
1,000-word class	62.9	75.8	20.5%
850-word class	46.0	63.4	37.8%
700-word class	27.8	42.6	53.2%
Mean	45.6	60.6	37.2%

In fact, according to the pre-test results, the number of words students needed to learn was much more than these numbers. The mean of the pre-test of the 1,000-word class was 21.8. They did not know 45.5%, approximately 455 of the entire 1,000 words, averaging 75.8 words per week to learn. Similarly, the 850-word class did not know about 380 words of their 850-word list, 63.4 words per week, and the 700-word class did not know about 256 words of their 700-word list, 42.6 words per week to learn. Therefore, the number of words students needed to learn was, in fact, 37.2 % more than they thought. All three of the classes were given a larger number of unknown words than the students thought.

4.2 Research Question 2

If a given number of words must be taught in a fixed period, should all of the words be taught, or is it more effective to concentrate on a smaller subset of the words?

The gains in the number of words learned within the entire 1000 words were compared. It was anticipated that the 1,000-word class would improve the most because only this group covered the entire 1,000 words. However, the ANOVA showed that there were no significant differences among the three classes. Therefore, when a teacher has to teach a specific list of words, covering the entire list or concentrating on smaller number of words may not make any difference in the student vocabulary acquisition rate within the entire list. A teacher can make a choice either to cover all of the words or only some. However, an acquisition rate of around 20 words per week should be taken into account.

4.3 The Length of the Lists

In all 3 classes, the number of words the students needed to study was much more than they could learn in the time available, and significant differences were not observed in the acquisition rates among the classes. The question remains: Which one is better, a longer list or a shorter one? There are advantages to both. When a students see a short list of frequent words, they may be encouraged, because it looks easy. However, a longer list gives more chance for students to study the words they need to learn. Although they may not be able to retain all of the words within the time given, they may be able to learn them more readily in the

future because of this exposure.

5. PEDAGOGICAL IMPLICATIONS

The results of this study offer several suggestions for vocabulary teaching for beginning level students using a frequency list. First, if possible, a teacher should decide the number of weeks to spend to cover the entire list in consideration of the number of words students can learn per week. The results in both parts of this study gave similar numbers for average weekly acquisition, around 20-23 words a week. In order to decide how many words on a list are unknown, a pre-test should be given. Student self-assessment is another way; however, students usually underestimate the number of words they do not know. In this study, the measured number of unknown words was about 37 percent more than students' own estimates. If the average number of unknown words per student in the class is 200, a program of around 10 weeks is necessary according to the result of this study. Even if a teacher is given the number of words to cover and a fixed length of time, the teacher can still decide how many words to cover as the size of the list given did not seem to affect the students vocabulary acquisition rate. Second, the weekly test should be cumulative so that students review the words they have learned. Third, because most of the work is done by students outside class, some students work harder than others. Therefore, assignments should be given; otherwise, some students will not prepare at all. Making vocabulary cards or a notebook is strongly recommended (Schmitt and Schmitt, 1995), and it can be given to students as an assignment. Nation (1990) and Palmberg (1990) are additional sources of useful techniques for facilitating vocabulary acquisition.

6. CONCLUSION

This study investigated the rate of vocabulary acquisition and the use of a 1000-word list to teach vocabulary to beginning level students. Classes were given different sizes of lists to study and the acquisition rates were compared. The result showed student learned about 20-23 words per week, regardless of the size of their lists. This 20-23 words per week acquisition rate is the result of self-study based vocabulary learning while the students were taking an intensive English course. In this study, it is impossible to determine how much of the vocabulary gain was

achieved as a result of the integrated study the students were doing in their classes and how much resulted from the study of the vocabulary lists. Undoubtedly, the two reinforced each other. Therefore, this rate may be different when students are taking a different kind of course. Further study should be undertaken with students who are taking different kinds of courses. In addition, in order to further investigate students' vocabulary acquisition rate, the study of various levels of students with various levels of vocabulary will be valuable.

Many teachers do not feel comfortable giving students a list of words without context. However, this method, when combined with a language-rich learning environment, has proven to be effective. The list used in this study was organized in the frequency order; therefore, students often meet the words in context and use these words in their regular classes. Moreover, as most of the work is done by students outside class, valuable class time can be used to teach other important skills. The use of a vocabulary list accompanied by regular English classes can help students greatly when they need to acquire language rapidly for any purpose. It is hoped that these results will be helpful to teachers designing a vocabulary component of a curriculum, and as a starting point for further research.

NOTES

1. The authors wish to thank their colleagues at Lakeland College Japan for assistance and support given while this study was underway.

2. A preliminary discussion of this research was presented at the 34th JACET Annual Convention held in Tokyo on September 16, 1995

3. The vocabulary lists used in this study can be obtained from the authors.

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